I claim:

1. A method for localizing a probe, comprising:

a) contacting a sample comprising a cell expressing a single chain antibody with a probe/ligand conjugate, said probe/ligand conjugate comprising:

1) a probe moiety,

2) a ligand that can bind with said single chain antibody, and

3) a linker moiety coupling said probe to said ligand.

2. The method of claim 1, wherein said probe is a spectroscopic probe.

3. The method of claim 2, wherein said method further comprises the step of detecting said probe/ligand conjugate.

4. The method of claim 2, wherein said single chain antibody is membrane bound.

5. The method of claim 2, wherein said single chain antibody has substantial identity to SEQ. ID. No. 1.

6. The method of claim 2, wherein said single chain antibody is an homologue of SEQ. ID. No. 1

7. The method of claim 2, wherein said probe/ligand conjugate is membrane permeant.

8. The method of claim 2, wherein said single chain antibody comprises a fusion protein.

9. The method of claim 3, wherein said detecting comprises NMR imaging.

10. The method of claim 3, wherein said detecting comprises positron emission tomography.

Sub B9

11. The method of claim 3, wherein said detecting comprises locating said fluorescence characteristic of said fluorescent moiety with said cell.

12. The method of claim 3, wherein said detecting comprises fluorescence activated cell sorting.

13. The method of claim 3, wherein said cell is an eukaryotic cell.

14. The method of claim 3, wherein said cell is a mammalian cell.

Sub B10

15. The method of claim 3, further comprising the steps of,

1) adding a stimulus to said cell and
2) detecting said probe/ligand conjugate, before and at least one time after addition of said stimulus.

16. The method of claim 3, wherein said detecting comprises detecting at least one optical property of said spectroscopic probe.

17. The method of claim 16, wherein said optical property is fluorescence emission.

18. The method of claim 16, wherein said optical property is fluorescence anisotropy.

19. A method for detecting a post-translational activity in a cell, comprising:

a) contacting a cell expressing a single chain antibody fused to a protein of interest with a spectroscopic probe/ligand conjugate, said spectroscopic probe/ligand conjugate comprising:

1) a spectroscopic probe moiety,
2) a ligand that can bind with said single chain antibody, and
3) a linker moiety coupling said spectroscopic probe to said ligand,

b) activating said post-translational activity in said cell, and

c) detecting said spectroscopic probe/ligand conjugate, before and at least one time after activation of said post-translational activity.

20. The method of claim 19, wherein said single chain antibody has substantial identity to SEQ. ID. No. 1.

21. The method of claim 19, wherein said single chain antibody is an homologue of SEQ. ID. No. 1

22. The method of claim 19, wherein said single chain antibody further comprises a fluorescent protein, or homologue thereof, fused to said protein of interest.

23. The method of claim 19, wherein said single chain antibody further comprises a second binding site for a fluorescent moiety.

24. The method of claim 19, wherein said detecting comprises NMR imaging.

25. The method of claim 19, wherein said detecting comprises positron emission tomography.

26. The method of claim 19, wherein said detecting comprises locating said fluorescence characteristic of said spectroscopic probe/ligand conjugate within said cell.

27. The method of claim 19, wherein said cell is an eukaryotic cell.

28. The method of claim 19, wherein said cell is a mammalian cell.

29. The method of claim 19, wherein said post-translational activity is proteolysis.

30. The method of claim 19, wherein said post-translational activity is protein phosphorylation.

31. The method of claim 19, wherein said post-translational activity is protein binding.

32. The method of claim 19, further comprising the steps of

1) adding a test chemical to said cells prior to activation of said post-translational activity,
2) detecting said spectroscopic probe/ligand conjugate, before and at least one time after activation of said post-translational activity in the presence of said test chemical,
3) detecting said spectroscopic probe/ligand conjugate, before and at least one time after activation of said post-translational activity in the absence of said test chemical,
4) comparing the results of said detecting in the presence and absence of said test chemical.

33. The method of claim 19, wherein said detecting comprises detecting at least one optical property of said spectroscopic probe.

34. The method of claim 33, wherein said optical property is fluorescence emission.

35. The method of claim 33, wherein said optical property is fluorescence anisotropy.

36. An expression vector comprising expression control sequences operatively linked to a nucleic acid sequence coding for the expression of a specific binding partner, said specific binding partner comprising:

1) a single chain antibody having a binding region which binds an spectroscopic probe/ligand conjugate,

2) a protein of interest fused to said single chain antibody; and

3) a fluorescent protein moiety fused to said protein of interest.

37. The expression vector of claim 36, wherein said spectroscopic probe moiety and the fluorescent protein change position relative to each upon post-translational modification of said protein of interest, altering the efficiency of fluorescence resonance energy transfer between said spectroscopic probe and said fluorescent protein.

38. The expression vector of claim 36, adapted for function in a prokaryotic cell.

39. The expression vector of claim 36, adapted for function in a eukaryotic cell.

40. An expression vector comprising expression control sequences operatively linked to a nucleic acid sequence coding for the expression of a specific binding partner, said specific binding partner comprising:

1) a single chain antibody having a binding region which binds an spectroscopic probe/ligand conjugate,

2) a protein of interest fused to said single chain antibody; and

3) a second protein moiety fused to said protein of interest, said second protein moiety comprising a binding region which binds a second fluorescent moiety.

41. The expression vector of claim 40, wherein said spectroscopic probe moiety and said second fluorescent moiety change position relative to each upon post-translational modification of said protein of interest, altering the efficiency of fluorescence resonance energy transfer between said spectroscopic probe and said second fluorescent moiety.

42. The expression vector of claim 41 adapted for function in a prokaryotic cell.

43. The expression vector of claim 41 adapted for function in a eukaryotic cell.

44. A host cell transfected with an expression vector comprising, an expression control sequence operatively linked to a sequence coding for the expression of a non naturally occurring specific binding partner, said non naturally occurring specific binding partner comprising:

a binding region which binds a probe/ligand conjugate, and

a fusion protein of interest covalently coupled to said specific binding partner.

45. The method of claim 44, wherein said probe is a spectroscopic probe.

46. The cell of claim 44, wherein said cell is a prokaryote.

47. The cell of claim 44, wherein said cell is *E. coli.*

48. The cell of claim 44, wherein said cell is a eukaryotic cell.

49. The cell of claim 44, wherein said cell is a yeast cell.

50. The cell of claim 44, wherein said cell is a mammalian cell.

51. A transgenic non-human animal having a phenotype characterized by expression of the nucleic acid sequence with substantial identity to SEQ ID. No. 1, the phenotype being conferred by a transgene contained in the somatic and germ cells of the mouse, the transgene comprising a nucleic acid sequence that encodes a specific binding partner specific antigen polypeptide.

52. A method of screening a test chemical for activity, comprising;

a) contacting a cell with a test chemical , said cell comprising,
a nucleic acid encoding a specific binding partner,
said specific binding partner comprising, a single chain antibody having a binding region which binds a spectroscopic probe/ligand conjugate,

b) contacting said cell with a spectroscopic probe/ligand conjugate, said spectroscopic probe/ligand conjugate comprising;

1) a spectroscopic probe moiety,

2) a ligand that can bind with said single chain antibody, and a linker moiety coupling said spectroscopic probe to said ligand, and

c) detecting said spectroscopic probe/ligand conjugate.

53. The method of claim 52, further comprising the step of comparing the results of detecting said sample treated with said test chemical to a second sample that has not been treated with said test chemical.

54. The method of claim 52, wherein said nucleic acid molecule is integrated into the genome of said cell.

55. The method of claim 52, wherein the expression of said nucleic acid molecule is under control of the genome of said cell.

56. The method of claim 52, wherein said nucleic acid molecule is operably linked to a response element.

57. The method of claim 52, wherein said nucleic acid molecule is operably linked to a promoter element.

58. The method of claim 52, wherein said cell is a eukaryotic cell.

59. A plurality of cells, comprising:

a plurality of living, cultured cells, each cell comprising:

1) a recombinant protein specific binding partner moiety, each said recombinant protein specific binding partner moiety comprising a randomized binding region, and

2) a fluorescent protein fused to said specific binding partner.

60. A method for localizing a probe, comprising:

a) contacting a sample comprising cell expressing a specific binding partner with a probe/ligand conjugate, said probe/ligand conjugate comprising:

1) a probe moiety,

2) a ligand that can bind with said specific binding partner, and

b) a linker moiety coupling said probe to said ligand, wherein said ligand and said specific binding partner bind non-covalently, wherein said probe/ligand conjugate is membrane permeant, and wherein the specific binding partner is expressed from a recombinant nucleic acid.

61. A method for detecting a post-translational activity in a cell, comprising:

a) contacting a cell expressing a specific binding partner fused to a protein of interest with a spectroscopic probe/ligand conjugate, said spectroscopic probe/ligand conjugate comprising:

1) a spectroscopic probe moiety,
2) a ligand that can bind with said specific binding partner, and
3) a linker moiety coupling said spectroscopic probe to said ligand,

b) activating said post-translational activity in said cell, and

c) detecting said spectroscopic probe/ligand conjugate, before and at least one time after activation of said post-translational activity, wherein said ligand and said specific binding partner bind non-covalently, wherein said probe/ligand conjugate is membrane permeant, and wherein the specific binding partner is expressed from a recombinant nucleic acid.

62. A method of screening a test chemical for activity, comprising:

a) contacting a cell with a test chemical, said cell comprising,
1) a nucleic acid encoding a specific binding partner, said specific binding partner comprising, a binding region which binds a spectroscopic probe/ligand conjugate,

b) contacting said cell with a spectrocsopic probe/ligand conjugate, said spectroscopic probe/ligand conjugate comprising;
2) a spectroscopic probe moiety,
3) a ligand that can bind with said specific binding partner, and a linker moiety coupling said spectroscopic probe to said ligand, and

c) detecting and spectroscopic probe/ligand conjugate, wherein said ligand and said specific binding partner bind non-covalently, wherein said probe/ligand conjugate is membrane permeant, and wherein the specific binding partner is expressed from a recombinant nucleic acid.

Sub B2

63. The method as in any of claims 60, 61 or 62, wherein the specific binding partner is a single chain antibody.

Add B3